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RESEARCH AND DEVELOPMENT LABORATORY,

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ABSTRACT:

A number of new substrates, emulsions, and techniques have been tried in the program for fabricating a test model of a crossed-cylinder lenticular screen having self-registering masking. One very promising substrate and one or two other possible choices have been identified. No fundamental difficulty is foreseen, but several serial fabrication processes must all be performed successfully on a single substrate in order to produce a satisfactory screen.

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CORNING GLASS WORKS
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RALEIGH, NORTH CAROLINA

IMPROVED SCREEN FOR REAR-PROJECTION VIEWERS

Technical Reports Nos. — 49 and 50

Date — January 30, 1970

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January 2, 1970 to January 30, 1970

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TECHNICAL REPORTS NOS. P-19-49 and 50

1. Introduction

The current effort is toward fabrication of a test model of a crossed-cylinder lenticular screen having self-registering masking. Since the writing of Technical Report P-19-44, 45, 46, a number of new substrates, emulsions and techniques have been tried. No fundamental difficulty has yet been encountered, but rather it is a matter of successfully performing all the necessary operations on a single substrate so as to end up with a good screen.

2. Additional Substrates and Emulsions

Table I lists the new materials which have been tried.

Table I

New Substrates for Self-Aligning Lenticular Screens

Substrate Designation	Substrate Material	Emulsion	Remarks
j	2.5-mil Estar® polyester AH backing bleached	Kodalith Ortho®	Poor adhesion. May have cast lenticules on emulsion side.
k	1/16" acrylic plastic	———	Good adhesion.
l	2.9-mil triacetate film base	Uncoated	Very poor adhesion.
m	2.5-mil Estar® polyester AH backing bleached	Kodalith Ortho®	Good adhesion obtained by mechanical roughening. Total thickness 6-7 mils.
n	2.5-mil Estar® polyester clear gelatin backing	Kodak 3493 RAR® (fixed)	Good adhesion. 3.5-4.5 mils thick.
o	2.5-mil Estar® polyester clear gelatin backing	Kodak 3493 RAR®	Good adhesion. 3.5-4.5 mils thick.
p	2.5-mil Estar® polyester AH backing bleached	Kodalith Ortho®	Mechanical roughening. Adhesion good. 3.8-4 mils thick. Fogging and brown coloration of emulsion.

Work on substrate i (Kodak 649 GH high resolution film with no backing) reported in P-19-44,45,46 was discontinued because the thickness of the material as received was 5.5 mils instead of 2.5 mils. It was then decided to further test the general approach embodied in substrate i by the use of available emulsions on 2.5-mil polyester. Substrates j, m, and p represent the attempts with Kodalith Ortho® film in which the antihalation (AH) backing was removed with developer before applying the lenticules. Since the lenticules had to be cast [redacted] STAT under darkroom conditions, the first two trials were expended in perfecting the casting technique under these new conditions. The lenticular coating on m was far too thick, because of premature epoxy setting. Raising the epoxy temperature slightly produced a just-acceptable total thickness of 3.8-4 mils in sample type p. However, during the masking process it was found that this emulsion had become badly fogged and that after processing a brown coloration remained where the emulsion should have been clear. It is conjectured that the combination of the prewash and exposure to hot epoxy caused these effects. If the AH backing can be bleached without adversely affecting the emulsion, this approach is still viable.

Substrates n and o were supplied to us by [redacted] STAT Eastman Kodak, with the principal objective of testing epoxy bonding to the clear gelatin backing. Very good adhesion was obtained, and masking is being attempted, although this emulsion may not be suitable.

The Kodak 649 GH emulsion on 2.5-mil Estar® polyester with clear gelatin backing is available by special order from the manufacturer. Furthermore, it is available in 52-inch width. There appears to be no basic difficulty in the way of successfully fabricating screens with this material.